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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor:	Mark A. Lauer	Ser. No.:	09/912,723
Filing Date:	July 23, 2001	Examiner:	W. Klimowicz
Docket No.:	LAUM-004	GAU:	2652

For: ELECTROMAGNETIC HEADS, FLEXURES, GIMBALS AND ACTUATORS FORMED ON AND FROM A WAFER SUBSTRATE

March 5, 2004

Mail Stop Appeal Brief
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

BRIEF FOR APPELLANT

This is an Appeal of the Final Rejection of claims 1-4, 6-14 and 17-20 dated October 3, 2003. A Notice of Appeal was filed January 5, 2004.

Real Party In Interest

Appellant Mark Lauer is the real party in interest.

Related Appeals and Interferences

Appellant knows of no other appeals or interferences that will directly affect or be directly affected by or have a bearing on the Board's decision in this pending Appeal.

Status of Claims

The application was originally filed with 20 claims. In response to a Restriction Requirement mailed March 31, 2003, Appellant on April 30, 2003 cancelled claims 5, 15 and 16 without prejudice, and amended claims 1 and 20. Pending claims 1-4, 6-14 and

17-20 are the subject of this Appeal. Appendix A lists the claims that are the subject of this Appeal.

Status of Amendments

An Election and Amendment was filed on April 30, 2003, which cancelled claims 5, 15 and 16 without prejudice, and amended claims 1 and 20. No amendment has been filed or entered after the Final Rejection.

Summary of Invention

In accordance with one embodiment, a device (e.g., 30, FIG. 1; ¶ 40, p. 8) is disclosed for reading or writing information, the device comprising an electromagnetic transducer (e.g., 40, 44, FIG. 1; ¶ 40, p. 8) including a plurality of solid transducer layers (e.g., 102, 105, 110, FIG. 3; ¶ 46, p. 11), a substrate (e.g., 100, FIG. 3; ¶ 45, p. 10) adjoining said transducer, said substrate shaped as a rigid body (e.g., 33, FIG. 1; ¶ 40, p. 8) adjacent to said transducer and as a plurality of flexible elements (e.g., 35, 38, FIG. 1; ¶ 40, p. 8) distal to said transducer, and an actuator (e.g., 404, 408, FIG. 20, FIG. 23; ¶ 67, p. 22, ¶ 72, p. 24) attached to said substrate distal to said transducer.

Issues

(1) Whether claims 1-4, 10-14, 19 and 20 are unpatentable under 35 USC 102(e) as being anticipated by U.S. Patent No. 6,246,552 to Soeno et al.?

(2) Whether claims 9, 17 and 18 are unpatentable under under 35 USC 103(a) as being obvious over U.S. Patent No. 6,246,552 to Soeno et al.?

Grouping of Claims

Claims 1-4, 10-14, 19 and 20 relate to Issue No. 1. The claims of this group do not stand or fall together.

Claims 9, 17 and 18 relate to Issue No. 2. The claims of this group do not stand or fall together.

Argument

I. Claims 1-4, 10-14, 19 and 20 are not unpatentable under 35 USC 102(e) as being anticipated by U.S. Patent No. 6,246,552 to Soeno et al. (Soeno).

Claim 1 recites:

> A device for reading or writing information, the device comprising:
>
> an electromagnetic transducer including a plurality of solid transducer layers,
>
> a substrate adjoining said transducer, said substrate shaped as a rigid body adjacent to said transducer and as a plurality of flexible elements distal to said transducer, and
>
> an actuator attached to said substrate distal to said transducer.

The Final Rejection states:

> As per claim 1, Soeno et al. (US 6,246,552 B1) discloses a device (including 1,2) for reading or writing information, the device comprising: an electromagnetic transducer (1) including a plurality of solid transducer layers (inherently provided, e.g., the poles and gap of an inductive head which must necessarily be present in order to operate), a substrate (e.g., 43) adjoining said transducer (1), said substrate (43) shaped as a rigid body adjacent to said transducer (1) and as a plurality of flexible elements (e.g., arms affixing (44) to frame (43) as seen in FIG. 5; or arms (431), (432) as seen in FIGS. 7(A,B), etc.) distal to said transducer (1), and an actuator (PZT elements between (44) and frame (43) as seen in FIGS. 5, 7, etc.) attached to said substrate (43) distal to said transducer (1).

The Examiner argues, for the first time on page 8 of the Final Rejection, that:

> Clearly, the word "adjoining" as it relates to the claims terms "substrate" and "transducer" does not *require* the elements to be in direct contact, as apparently alleged by the Applicant. Note that *Webster's II Riverside New College Dictionary* defines "adjoin" as:
>
> 1. To be next to. 2. To attach by joining-*vi.* To be in or nearly in contact.
>
> The instant specification is completely silent with respect to the definition of the word "adjoining." The dictionary definition indicates that the use of the word "adjoining" merely requires that two elements or objects be next to each other, and possibly contacting one another, but are expressly not required to be in contact.

Appellant thanks the Examiner for providing, in an Advisory Action mailed December 24, 2003, evidence that the word "adjoin" could be interpreted as: "To be next to," " To attach by joining" or "To be in or nearly in contact." Note that immediately

following the definition of "adjoin" provided by the Examiner is a definition of "adjoining" as "Bordering: contiguous."

Appellant respectfully asserts that the definition of "adjoining" proposed by the Final Rejection is not that which would be understood by one of ordinary skill in the art in view of the specification.

> [A] common meaning, such as one expressed in a relevant dictionary, that flies in the face of the patent disclosure is undeserving of fealty. As one of our predecessor courts stated . . . : Indiscriminate reliance on definitions found in dictionaries can often produce absurd results . . . . One need not arbitrarily pick and choose from the various accepted definitions of a word to decide which meaning was intended as the word is used in a given claim. The subject matter, *the context*, etc., will more often than not lead to the correct conclusion.

Combined Systems v. Defense Technology of America, et al., 68 USPQ2d 1933, 1939 (Fed. Cir. 2003).

The abstract of the present application states, in part:

> Devices for reading or writing electromagnetic information include a wafer substrate piece disposed between an electromagnetic transducer and an electrostrictive or piezoelectric actuator. The substrate piece is shaped as a rigid body adjoining the transducer and as a flexible element connecting the body and the actuator. To fabricate, at least one electrostrictive layer and many transducers are formed on opposite sides of a wafer that is then cut into rows containing plural transducers...

In accordance with this quotation, paragraph 40 of the specification states:

> FIG. 1 shows a media-facing side of a device 30 of the present invention including an integrated head 33, gimbal 35 and flexure 38. The head 33 includes an inductive transducer 40 and a magnetoresistive (MR) transducer 44, although other types of transducers may alternatively be employed. As will be explained in greater detail below, the transducers 40 and 44 are formed along with many other similar transducers on a wafer substrate, after which the wafer is cut into rows each containing a number the transducers, and the rows are then processed from another direction to form the integrated head 33, gimbal 35 and flexure 38.

Appellant respectfully asserts that one of ordinary skill in the art would not, after reading these and other passages and viewing FIG. 1 and other figures, agree with the Examiner that Soeno discloses "a substrate (e.g., 43) adjoining said transducer (1)." In

contrast, one of such skill would note that Soeno's "fixed part 43" is separated from its "electromagnetic transducer element 1" by its "slider 2."

Appellant also respectfully disagrees with the Final Rejection assertion that Soeno discloses "an electromagnetic transducer (1) including a plurality of solid transducer layers (inherently provided, e.g., the poles and gap of an inductive head which must necessarily be present in order to operate)." Appellant respectfully asserts that the poles and gap of an inductive head can also be formed with an iron core mounted on the trailing end of a slider. The side views of Soeno (e.g., FIGs. 13 and 17) seem to show such an appendage mounted on the trailing end of "slider 2." Alternatively, sliders have also been formed with a magnetic (e.g., ferrite) substrate which forms part of the inductive head. This also could be the reason for the appendage shown in the side views. Thus Soeno does not disclose "an electromagnetic transducer including a plurality of solid transducer layers" that are *naturally and necessarily present*, and claim 1 is not anticipated by Soeno for this reason also.

In response to this reasoning, the Final Rejection states:

> all that is required of the electromagnetic transducer is a head having just two solid layers. All examples cited by the Applicant in an attempt to obviate the Examiner's inherency position fail. That is, all magnetic transducers in order to operate must necessarily have at least two poles in order to create a bridging gap, as is necessarily realized by one having ordinary skill in the art, and all that is required for the electromagnetic transducer of claim 1, which includes "a plurality of solid transducer layers" is merely at least two layers, which could in fact be the poles of the head.

Appellant respectfully disagrees. A horseshoe-shaped magnet wound with a coil of wire will operate as suggested by the Final Rejection, and only includes a single layer. Moreover, perpendicular recording does not require a "bridging gap," a fact that would be known by one of ordinary skill in the art, and does not require more than one pole layer, although often a return pole layer is included. For example, U.S. Patent No. 4,286,299 to Shirahata et al., three copies of which are enclosed, teaches that a magnetic head may have a single magnetic core layer around which is wrapped a winding carrying the recording current for vertical magnetization.

> To serve as an anticipation when the reference is silent about the asserted inherent characteristic, such gap in the reference may be filled

with recourse to extrinsic evidence. Such evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference and that it would be so recognized by persons of ordinary skill. *In re Oelrich*, 212 USPQ 323, 326 (C.C.P.A. 1981) (quoting *Hansgirg v. Kemmer*, 40 USPQ 665, 667 (C.C.P.A. 1939)) provides:

> Inherency, however may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.

Continental Can Co. USA v. Monsanto Co., 20 USPQ 2d 1746, 1749 (Fed. Cir. 1991).

The Examiner has not provided evidence or made clear that the missing descriptive matter is necessarily present in the thing described in the reference and that it would be so recognized by persons of ordinary skill. On the contrary, Shirahata et al. shows that "a plurality of solid transducer layers" is not necessarily present in Soeno.

Appellant further notes that the Final Rejection defines "a plurality of flexible elements" as "arms affixing (44) to frame (43)" and also defines "an actuator" as "PZT elements between (44) and frame (43)." In contrast, claim 1 defines a "*substrate shaped* as a rigid body adjacent to said transducer and *as a plurality of flexible elements* distal to said transducer, and an *actuator attached to said substrate* distal to said transducer." For this reason also Soeno does not anticipate claim 1.

In response to this reasoning, the Final Rejection essentially restates the earlier rejection. Note, however:

> Anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, *arranged as in the claim.*

Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co., 221 USPQ 481, 485 (Fed. Cir. 1984) (emphasis added).

The Final Rejection ignores the wording of claim 1, by pointing to the same structure as being both "flexible elements" of the "substrate" and an "actuator attached to said substrate." Stated differently, the Final Rejection has ignored at least one material limitation of claim 1.

It is curious that the Final Rejection uses the word "arms" when that word is not found in Soeno. It is also curious that Soeno states that its "actuator comprises a fixed

part, a movable part and at least two beam members for connecting said fixed and movable parts together" (See, e.g., Summary, column 6, lines 29-31), whereas the Final Rejection states that Soeno's "actuator" is "PZT elements between (44) and frame (43)." In other words, the Final Rejection is inconsistent with the teaching of Soeno as well as inconsistent with the arrangement of the limitations of claim 1.

For at least these reasons, the Final Rejection has not presented a prima facie case of anticipation of claim 1.

Claims 2-4, 6-8 and 10 are not anticipated by Soeno for at least the reasons given above for claim 1.

For example, claim 3 recites:

> The device of claim 1, wherein said actuator includes a layer of piezoelectric material, and said transducer layers are substantially parallel with said layer of piezoelectric material.

The Final Rejection states:

> As per claim 3, said actuator includes a layer of piezoelectric material, and said transducer layers are substantially parallel with said layer of piezoelectric material. That is the transducer as seen, e.g., FIG. 5, has a dimensional attribute extending from the left side to the right side of the slider (laterally, as does the PZT elements sandwiched between electrodes (45)).

Evan if, *assuming arguendo*, one were to believe the Final Rejection argument that a plurality of transducer layers are necessarily present in Soeno, there is no way to know the orientation of these hypothetical transducer layers. FIG. 5, which is cited by the Final Rejection, does not show transducer layers. Moreover, having "a dimensional attribute" that extends in one direction, does not necessarily mean that a layer, which extends primarily in two dimensions, is substantially parallel to other layers. For this reason, claim 3 is separately patentable compared to claim 1.

Moreover, claim 6 recites:

> The device of claim 1, wherein said flexible elements are substantially aligned with a center of mass of said rigid body.

The Final Rejection states:

> As per claim 6, said flexible elements (e.g., FIG. 5 or FIG. 7A, 7B,

etc.) are "substantially" aligned with a center of mass of said rigid body (43) (since they are symmetrically aligned with frame (43)).

The Final Rejection does not state which elements in "FIG. 5 or FIG. 7A, 7B" are " 'substantially' aligned with a center of mass of said rigid body (43)." If, however, one assumes that Final Rejection is referring to "displacement generating means 41," it is clear that those means are not substantially aligned with a center of mass of "fixed part 43." A glance at FIG. 5, for instance, shows that "displacement generating means 41" point away from a center of "fixed part 43." For at least this reason, claim 6 is separately patentable compared to claim 1.

In addition, claim 8 recites:

> The device of claim 1, wherein said flexible elements are aligned substantially with a plane, and said rigid body and said actuator are intersected by said plane.

The Final Rejection states:

> As per claim 8, said flexible elements (e.g., FIG. 5 or FIG. 7A, 7B, etc.) are "substantially" aligned with a center of mass of said rigid body (43) (since they are symmetrically aligned with frame (43)).

Evan if, *assuming arguendo*, one accepts the Final Rejection's confusion in labeling the same structure as being both "flexible elements" of the "substrate" and an "actuator attached to said substrate" in an attempt to anticipate claim 1, this confusion becomes compounded by the rejection of claim 8. For example, it is easy for the Final Rejection to assert that plural elements are aligned with a plane when the Final Rejection has created those plural elements from a single prior art structure. Regardless of whether the flexible element or the actuator is considered to be absent from Soeno, the flexible element and the actuator are not aligned substantially with a plane. For this reason, claim 8 is separately patentable compared to claim 1.

Claim 11 recites:

> A device for reading or writing information, the device comprising:
>
> a wafer substrate piece disposed between an electromagnetic transducer and an electrostrictive actuator, said substrate piece shaped as a rigid body adjoining said transducer and as a flexible element connecting said rigid body and said actuator.

Regarding claim 11, the Final Rejection states:

> Additionally, as per claim 11, the device further is defined as comprising (as per embodiment depicted in FIG. 21): a wafer substrate piece (3) disposed between an electromagnetic transducer (1) and an electrorestrictive actuator (41, 45, 55 as seen in FIG. 21), said substrate piece shaped as a rigid body adjoining said transducer and as a flexible element (flex arms of (3)) connecting said rigid body to said actuator.

As noted above regarding claim 1, the abstract of the present application states, in part:

> Devices for reading or writing electromagnetic information include a wafer substrate piece disposed between an electromagnetic transducer and an electrostrictive or piezoelectric actuator. The substrate piece is shaped as a rigid body adjoining the transducer and as a flexible element connecting the body and the actuator. To fabricate, at least one electrostrictive layer and many transducers are formed on opposite sides of a wafer that is then cut into rows containing plural transducers...

In accordance with this quotation, paragraph 40 of the specification states:

> FIG. 1 shows a media-facing side of a device 30 of the present invention including an integrated head 33, gimbal 35 and flexure 38. The head 33 includes an inductive transducer 40 and a magnetoresistive (MR) transducer 44, although other types of transducers may alternatively be employed. As will be explained in greater detail below, the transducers 40 and 44 are formed along with many other similar transducers on a *wafer substrate*, after which the wafer is cut into rows each containing a number the transducers, and the rows are then processed from another direction to form the integrated head 33, gimbal 35 and flexure 38.

Appellant respectfully asserts that one of ordinary skill in the art would not, after reading these and other passages and viewing FIG. 1 and other figures, agree with the Examiner that Soeno discloses "a wafer substrate (3) ...adjoining said transducer (1)." In contrast, one of such skill would note that Soeno's "suspension 3" is separated from its "electromagnetic transducer element 1" by its "slider 2."

Appellant also respectfully disagrees with the Final Rejection assertion that Soeno discloses "a wafer substrate piece (3)." Instead, Soeno states "The suspension 3 is formed by bending, punching or otherwise processing a resilient stainless sheet." See column 1, lines 43-45.

In response to this reasoning, the Final Rejection asserts:

> although the substrate piece is formed such that it is of stainless steel composition, it is a wafer in the sense that it is a thin substrate used for support. The Examiner notes that the term "wafer' has been used in prior patent literature to describe elements that are indeed formed of stainless steel and are thin substrates. The Examiner evidences, *inter alia*, US Patent Nos. 4,636,047, which generally recites "wafers" formed of steel; 5,417,294, which recites a stainless steel wafer (106), and 6,170,088, which discloses a steel wafer (114). These patent references are clearly illustrative of the broad meaning of the term "wafer," wherein the term "wafer" is not limited to an exclusive material composition, but can be formed of many materials.

Appellant notes that none of the patents disclosed in the Final Rejection relate to electromagnetic transducers, heads or actuators.

The '047 patent discloses:

> a high quality mirror readily at hand for the emergency use of a contact lens wearer...comprises a steel wafer shaped approximately to conform with the shape of the watch back.

The '294 patent discloses:

> "pneumatic hammers"... known to have a "valve disc 106 (that) is a stainless steel wafer."

The '088 patent discloses:

> The invention has particular applicability to golf headgear, such as hats and visors. The ferrous objects employed may be configured as thin metal sheets, discs, wafers, or strips attached to or embedded within the bill or a golf hat or visor.

Appellant respectfully asserts that none of these patents disclose what would be considered a "wafer substrate piece" by one of ordinary skill in the art to which the present invention pertains.

> Invalidity for anticipation requires that all of the elements and limitations of the claim are found within a single prior art reference. . . . *There must be no difference between the claimed invention and the reference disclosure, as viewed by a person of ordinary skill in the field of the invention.*

Scripps Clinic & Research Found. v. Genentech Inc., 18 USPQ 2d 1001, 1010 (Fed. Cir. 1991) (emphasis added).

Illustratively, a search of the Patent Office database for patents issued from 1976 to the present and containing the term "steel wafer" yields 21 patents. In contrast, a similar search for patents containing the term "semiconductor wafer" yields 28,599 patents. Similarly, a search for patents containing the term "silicon wafer" yields 26,304 patents. The Final Rejection's interpretation of the term "wafer substrate piece" is clearly in conflict with that of a person of ordinary skill in the field of the invention. That is, one of such skill would not view the stainless steel suspension 3 of Soeno as the wafer substrate piece defined in claim 11.

Moreover, as noted in C.R. Bard, Inc. v M3 Systems, Inc., 48 USPQ2d 1225, 1230 (Fed. Cir. 1998) [quoting *Slimfold Mfg. Co. v. Kinkead Indus., Inc.*, 1 USPQ2d 1563, 1566 (Fed. Cir. 1987)], "claims are not interpreted 'in a vacuum,' but are read and understood in light of the specification of which they are a part."

A person of ordinary skill in the field of the invention would not believe that Soeno's "suspension 3" is a "a wafer substrate piece," when read and understood in light of the specification.

Assuming arguendo that Soeno's "suspension 3" is a "a wafer substrate piece," the Final Rejection does not identify "a flexible element connecting said rigid body and said actuator" in FIG. 21 of Soeno, as defined in claim 11. Perhaps this is because Soeno states that a "connecting portion 32b is bonded on the front side to a moveable part 44 of the actuator and on the back side to the slider 2....The connecting portion 32b in this embodiment is regarded as a rigid body in a state where it is bonded to the moveable part 44 and the slider 2... " (column 28, lines 7-14). In other words, the "rigid body" connects the "suspension 3" to the "actuator 4," in contrast to claim 11.

For at least these reasons, the Final Rejection has not presented a prima facie case of anticipation of claim 11, and claim 11 is separately patentable compared to claim 1 and claim 20.

Claims 12-14 and 19 are not anticipated by Soeno for at least the reasons given above for claim 11.

For example, claim 13 recites:

The device of claim 11, wherein:
said actuator includes a layer of piezoelectric material, and

said transducer includes a plurality of layers that are substantially parallel with said layer of piezoelectric material.

The Final Rejection states:

> As per claim 13, said actuator includes a layer of piezoelectric material (PZT elements between (44) and frame (43) as seen in FIG. 21), and said transducer (1) includes a plurality of layers (inherently provided, e.g., the poles and gap of an inductive head which must necessarily be present in order to operate) that are substantially parallel with said layer of piezoelectric material. That is the transducer as seen, e.g., FIG. 21, has a dimensional attribute extending from the left side to the right side of the slider (laterally, as does the PZT elements sandwiched between electrodes (45)).

Evan if, *assuming arguendo*, one were to believe the Final Rejection argument that a plurality of transducer layers are necessarily present in Soeno, there is no way to know the orientation of these hypothetical transducer layers. FIG. 21, which is cited by the Final Rejection, does not show transducer layers. Moreover, having "a dimensional attribute" that extends in one direction, does not necessarily mean that a layer, which extends primarily in two dimensions, is substantially parallel to other layers. For this reason, claim 13 is separately patentable compared to claim 11.

Claim 20 recites:

A device for reading or writing information, the device comprising:

an electromagnetic transducer including a plurality of solid transducer layers,

a substrate adjoining said transducer, said substrate shaped as a rigid body adjacent to said transducer and as a plurality of flexible elements distal to said transducer, and

actuation means for positioning said transducer,

said actuation means attached to said substrate distal to said transducer.

The Final Rejection further states, with regard to claim 20:

> Additionally, as per claim 20, the device is further defined as comprising: an electromagnetic transducer (1) including a plurality of solid transducer layers (as discussed per claim 1 and/or 11), a substrate (e.g., 3 as seen in FIG. 21) adjoining said transducer (1), said substrate (3) shaped as a rigid body adjacent to said transducer (1) and as a plurality of flexible elements (flex arms of (3)) distal to said transducer (1), and an actuator means (4) attached to said substrate (3) "distal" to said transducer (1).

As noted above, the abstract of the present application states, in part:

> Devices for reading or writing electromagnetic information include a wafer substrate piece disposed between an electromagnetic transducer and an electrostrictive or piezoelectric actuator. The substrate piece is shaped as a rigid body adjoining the transducer and as a flexible element connecting the body and the actuator. To fabricate, at least one electrostrictive layer and many transducers are formed on opposite sides of a wafer that is then cut into rows containing plural transducers...

In accordance with this quotation, paragraph 40 of the specification states:

> FIG. 1 shows a media-facing side of a device 30 of the present invention including an integrated head 33, gimbal 35 and flexure 38. The head 33 includes an inductive transducer 40 and a magnetoresistive (MR) transducer 44, although other types of transducers may alternatively be employed. As will be explained in greater detail below, the transducers 40 and 44 are formed along with many other similar transducers on a wafer substrate, after which the wafer is cut into rows each containing a number the transducers, and the rows are then processed from another direction to form the integrated head 33, gimbal 35 and flexure 38.

Appellant respectfully asserts that one of ordinary skill in the art would not, after reading these passages and viewing FIG. 1, agree with the Examiner that Soeno discloses "a substrate (e.g., 3 as seen in FIG. 21) adjoining said transducer (1)." In contrast, one of such skill would note that Soeno's "suspension 3" is separated from its "electromagnetic transducer element 1" by its "slider 2."

Appellant also respectfully disagrees with the Final Rejection assertion that Soeno discloses "an electromagnetic transducer (1) including a plurality of solid transducer layers (as discussed per claim 1 and/or 11)." As discussed above with regard to claim 1, Soeno does not disclose "an electromagnetic transducer including a plurality of solid transducer layers" that are "naturally and necessarily present." Therefore, claim 20 is not anticipated by Soeno.

II. Claims 9, 17 and 18 are not unpatentable under 35 USC 103(a) as being obvious over Soeno.

Claims 9 and 17 stand finally rejected under 35 USC 103(a) as being unpatentable over Soeno in view of U.S. Patent No. 5,886,857 to Symons et al. Claim 9 recites:

> The device of claim 1, wherein said rigid body has a media-facing-surface separated from a back surface, and said back surface has a protrusion extending away from said media-facing surface.

The Final Rejection states:

> As per claims 9 and 17, although Soeno et al. (US 6,246,552 B1) does not expressly show wherein the back surface of (43) or (3) has a protrusion extending away from the media-facing surface, Official notice is taken that protrusions provided between sliders and their supports to allow for pitching motion of the slider relative to a medium surface, is a concept that is notoriously old and well known in the art.

Responsive to Appellant's traversal of the Office Action's citation of Official Notice, the Final Rejection cites U.S. Patent No. 5,886,857 to Symons et al. Symons et al. teach a "load point dimple 28" that extends downward to contact a flexure 30. Symons et al., however, do not teach or suggest a "a protrusion extending away from said media-facing surface," as defined in claim 9. For at least that reason claim 9 is nonobvious over Soeno in view of Symons et al., and is separately patentable compared to claim 18.

Claim 17 recites:

> The device of claim 1, wherein said rigid body has a media-facing-surface separated from a back surface, and said back surface has a protrusion extending away from said media-facing surface.

As noted above regarding claim 9, Symons et al. do not teach or suggest a "a protrusion extending away from said media-facing surface," as defined in claim 17. Moreover, providing a protrusion extending away from the connecting portion 32b of Soeno would have appeared to one of ordinary skill in the art to interfere with the connection of the connecting portion, and so would not have been attempted by one of such skill. For at least that reason claim 17 is nonobvious over Soeno in view of Symons et al., and is separately patentable compared to claim 9.

Claim 18 stands finally rejected under 35 USC 103(a) as being unpatentable over Soeno in view of U.S. Patent No. 5,896,246 to Budde et al. Claim 18 recites:

> The device of claim 11, wherein said rigid body and said actuator contain a material including silicon.

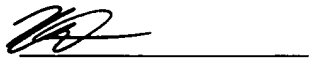
While Budde et al. teaches a "suspension fabricated from silicon," Soeno teaches that for an actuator "it is usually preferable to use ceramic piezoelectric or electrostrictive materials such as PZT [Pb(Zr, Ti)O.sub.3], PT (PbTiO.sub.3), PLZT [(Pb, La)(Zr, Ti)O.sub.3], and barium titanate (BaTiO.sub.3) because of their high rigidity." (column 31, lines 60-62). Thus one of ordinary skill in the art would not have substituted silicon for the preferred actuator materials listed in Soeno, because this would have lowered the piezoelectric or electrostrictive effect of the actuator. For at least this reason claim 18 is nonobvious over Soeno in view of Budde et al., and is separately patentable compared to claims 9 and 17.

Conclusion

Appellants respectfully assert that all the pending claims are allowable and therefore request reversal of the Examiner's rejections. The pending claims are not anticipated by Soeno, and the Final Rejection fails to state a prima facie case of anticipation. The pending claims are also not obvious over Soeno, and the Final Rejection fails to state a prima facie case of obviousness.

This brief is being submitted in triplicate along with three copies of U.S. Patent No. 4,286,299 and a check in the amount of $165.00 to pay the Appeal Brief fee.

Respectfully submitted,



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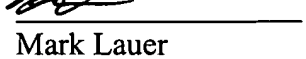

Mark Lauer

Appendix A

1. A device for reading or writing information, the device comprising:

an electromagnetic transducer including a plurality of solid transducer layers,

a substrate adjoining said transducer, said substrate shaped as a rigid body adjacent to said transducer and as a plurality of flexible elements distal to said transducer, and

an actuator attached to said substrate distal to said transducer.

2. The device of claim 1, wherein said actuator includes a layer of piezoelectric material.

3. The device of claim 1, wherein:

said actuator includes a layer of piezoelectric material, and

said transducer layers are substantially parallel with said layer of piezoelectric material.

4. The device of claim 1, wherein said actuator includes a plurality of layers of piezoelectric material.

6. The device of claim 1, wherein said flexible elements are substantially aligned with a center of mass of said rigid body.

7. The device of claim 1, wherein said rigid body has a media-facing-surface separated from a back surface in a Z-direction, and at least a portion of said flexible elements is disposed at a Z-height between said surfaces.

8. The device of claim 1, wherein said flexible elements are aligned substantially with a plane, and said rigid body and said actuator are intersected by said plane.

9. The device of claim 1, wherein said rigid body has a media-facing-surface separated from a back surface, and said back surface has a protrusion extending away from said media-facing surface.

10. The device of claim 1, wherein at least one of said flexible elements contains a plurality of conductive leads.

11. A device for reading or writing information, the device comprising:

a wafer substrate piece disposed between an electromagnetic transducer and an electrostrictive actuator, said substrate piece shaped as a rigid body adjoining said transducer and as a flexible element connecting said rigid body and said actuator.

12. The device of claim 11, wherein said actuator includes a layer of piezoelectric material.

13. The device of claim 11, wherein:

said actuator includes a layer of piezoelectric material, and

said transducer includes a plurality of layers that are substantially parallel with said layer of piezoelectric material.

14. The device of claim 11, wherein said flexible element includes a plurality of flexible portions aligned substantially with a plane, and said rigid body and said actuator are intersected by said plane.

17. The device of claim 11, wherein said rigid body has a media-facing-surface separated from a back surface, and said back surface has a protrusion extending away from said media-facing surface.

18. The device of claim 11, wherein said rigid body and said actuator contain a material including silicon.

19. The device of claim 11, wherein said device includes means for providing electrical voltage to said actuator.

20. A device for reading or writing information, the device comprising:

an electromagnetic transducer including a plurality of solid transducer layers,

a substrate adjoining said transducer, said substrate shaped as a rigid body adjacent to said transducer and as a plurality of flexible elements distal to said transducer, and

actuation means for positioning said transducer,

said actuation means attached to said substrate distal to said transducer.